

MAKAROV, V.L.

Condition of equilibrium in the ~~M~~ann model. Sib.mat.shur.
3 no.3:476-478 My-Je '62. (MIRA 15:9)
(Economics, Mathematical)

LEYKIN, M.G., inzh.; MAKAROV, V.L., inzh.; MESHMAN, A.N., inzh.

Performance testing of the SM-580A stonecutting machine. Stroi.
i dor. mashinostr. 5 no.4:26-27 Ap '60. (MIRA 13:9)
(Quarries and quarrying--Equipment and supplies)

STARCHIKOV, A.V., insh.; MAKAROV, V.L., insh.

Stone-handling machine designed by Krivorutchenko. Stroi. mat. 6
no.12:23-24 D '60. (MIRA 13:11)
(Quarries and quarrying--Equipment and supplies)

LEYKIN, M.G.; MAKAROV, V.L.

Mechanizing the extraction and loading of building stone. Mekh.
stroil. 18 no. 3:16-17 Mr '61. (MIRA 14:5)

1. Krymskiy filial NIISMII.
(Building stones--Transportation)

LEYKIN, M.G., kand.tekhn.nauk; MAKAROV, V.L., inzh.; BRYANOV, V.V., inzh.

The economic basis of the efficient capacity of sawed stone
quarries. Stroi. mat. 8 no.8:21-23 Ag '62. (MIRA 15:9)
(Quarries and quarrying)

MAKAROV, V.L., inzh.; STARCHIKOV, A.V., inzh.

Mechanisation of loading and unloading operations in the
extraction of wall blocks. Mekh.stroi. 19 no.12:10-11 D '62.
(MIRA 15:12)
(Loading and unloading) (Crimea--Building stones)

ACCESSION NR: AP4012347

S/0199/64/005/001/0102/0108

AUTHOR: Makarov, V. L.

TITLE: Turing machines and finite automata

SOURCE: Sibirskiy matematicheskiy zhurnal, v. 5, no. 1, 1964, 102-108

TOPIC TAGS: automation, finite automation, turing machine

ABSTRACT: A study of Turing machines revealed that the following limitations do not reduce the class of transformations or mappings which is realizable with the general Turing machine: (1) The work of machine $M^{(1)}$ begins with a survey of the first nonempty letter of a word recorded on the tape. (2) The machine $M^{(2)}$ is not applicable to an empty word and when a coherent word is being processed a noncoherent word cannot appear on the tape of the machine (a word P is called coherent if it contains no empty symbols e). (3) The machine $M^{(3)}$ (with limitations 1 and 2) works in such a way that: (a) The tape cannot change its direction of motion unless the recording head prints the empty letter e ; (b) The machine stops only when the head is at the end of a word and is printing the symbol e . (4) When the tape motion of the machine $M^{(4)}$ is to the right no changes in the processed word can take place. (5) The recording head of machine $M^{(5)}$ is in the same state q_0 at the beginning of each step, i. e., when the first nonempty letter of a word recorded on tape is being

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ACCESSION NR: AP4012347

transformed. Examples of Turing machines with all five of these limitations are given. It is pointed out that the performance of a Turing machine in which the tape can move in one direction only is equivalent to the performance of an operator realizable in a finite automaton. The connection between Turing machines and finite automata is discussed. The primary conclusion is that: for an arbitrary, partially-recursive function it is possible to construct a primitive-recursive operator, without anticipatory properties, which realizes a transformation which is in some sense equivalent to the transformation which is realized for the given partially-recursive function. "The author is indebted to B. A. Trakhtenbrot for his criticism and assistance." Orig. art. has: numerous formulas.

ASSOCIATION: none.

SUBMITTED: 31Aug62

DATE ACQ: 26Feb64

ENCL: 00

SUB CODE: DP, MA

NO REF SOV: 001

OTHER: 001

Card

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MAKAROV, V.L.

Asymptotic behavior of the solutions to linear dynamic models
of economic systems with discrete time. Dokl. AN SSSR 165
no.4:767-769 D '65. (MIRA 18:1.)

1. Institut matematiki Sibirskogo otdeleniya AN SSSR.
Submitted April 10, 1965.

Country : USSR

M

Category: Cultivated Plants Fodders.

Abs Jour: RZhBiol., No 11, 1958, No 48993

Author : Makarov, V.M.

Inst : Sci. Res. Inst. of Fodder and Pasturage

Title : Aftermath quality of Perennial Grasses under the
Conditions of Acid Steppe of Aktyubinskaya Oblast

Orig Pub: Tr. n.-i. in-ta kornov i pastbishch, 1957, 1,
212-217

Abstract: The two-year experiments of the Aktyubin Experi-
mental Station on preparatory mowing of Sudan grass
and Chinese sugar cane at a low height showed that
with this method it is feasible to make the plants
vegetate for a long period and increase the reserves

Card : 1/2

M-89

MAKAROV, V. M. Cand Tech Sci -- "Certain ^{methods of the} agricultural engineering ~~methods~~ of
~~sowing annual cereals under~~ ^{grasses for} green fodder under conditions of the semi-desert ^{and}
zone of Akhtyubinskaya Oblast." Alma-Ata, 1961 (Min of Higher and Secondary
Specialized Education ^{KaSSR,} ~~██████████~~ Kazakh State Agr Inst). (KL, 4-61, 204)

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SHAPIRO, M.B. , inzh.; MAKAROV, V.M., inzh.

Increasing the durability of compressor valve plates. Sbor.
st. NIIKHIMMASH no. 23:96-104 '57. (MIRA 12:5)
(Steel--Heat treatment)
(Valves)

MAKAROV, V.M., inzh.; LAKHTIN, A.A., kand. tekhn. nauk; LOVTSKIY, E.V., inzh.

Possibility of the use of lenticular expansion joints at high pressures. Khim. mash. 3 no.3:26-29 My-Je '59.

(Pipe joints)

(MIRA 12:12)

PLEASE I BOOK FOR THE
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Смешно-ташмиче абабасте мадиноститал'юй прув'хленност.
Свердловске одаимизе

Abkhazistaya i avtonomizatsiya mashinostroyitel'noy promyshlennosti
Armenii i Avtonomizatsiya mashinostroyitel'noy promyshlennosti
1979. 319 p. 12,000 copies printed.

M. I. Zh. V. Bul'kov, Doctor of Technical Sciences, Senior Engineer,
National Bank P. P. Yudin, Engineer, V. V. Zhukov,
Technical School, Zh. V. Bul'kov, Engineer,
Sverdlovsk, Graduate of Technical School, M. I.
Technical School, L. S. Bul'kov, Graduate of
Technical School, Graduate of Technical School, M. I.
L. S. Bul'kov, Graduate of Technical School, and P. P. Yudin, Graduate of Technical School.

PURPOSE: This book is intended for production engineers and technicians in industrial planning.

According to the material presented in this book it is not surprising that the development and use of the various types of chemical and physical methods for the detection of chemical and physical changes in the environment have been the subject of a great deal of research. The results of this research are presented in the book in a clear and concise manner. The book is a valuable reference for anyone interested in the detection of chemical and physical changes in the environment.

Specialization and Automation (Cont.)

2. Mechanization and Automation of Assembling (Mogorov, B. P., Candidate of Technical Sciences, and D. G. Sillev, Engineer) -
The use of mechanized tools

EXTRACTED FROM THE

Modernization and Automation of Mineral Inspection of RUs
(Substantively V. V., Candidates of Technical Sciences, and V. V.
and V. V., Candidates of Technical Sciences)

Rehabilitation and Automation of Control Devices for Checking Parts After Machining (Ligatov, A. V. and S. A. Buzynitsky, Engineers)

**The use of light-aligning devices
Stochastic inspection methods
Automatic inspection apparatus**

Inspection by Means of Eddy Currents (Pridgin, E. R., Graduate of
Mechanical Engineering and L. B. Korobynnikov, Engineer)
Eddy current method

Effect of the geometry and physical properties of the product on the electrostatic force
Separate determination of two parameters
Formulation of a method of calculation

Wojciech Atych
 Selection of the poet essay
 published in the Warsaw collection
 "Wojciech Atych" 1970

**Magnetic Method of Quality Inspection (Saladins, V. I. A. Glaser)
Principles of the magnetic method
Sensitivity meter of L. B. Khayrullayev's system**

Insulating the case and hardware of quartz-hardened parts

Surface inspection of cast-iron parts

V. E. Engineer
Devices for checking large parts
Inspection of the basic parameters of structures under erection
Inspection in erection of large machinery (vertical)

Source for national information

P. T. Anderson, Engineer:
on the methods of calculating economic effectiveness
connected with the mechanization and automation of new machines

SECRETARY (Secretary, B. E., Committee of Technical
(Person)

LIBRARY: Library of Congress

Journal Pre-proof

APPROVED FOR RELEASE: 06/20/2000

CIA-RDP86-00513R001031510012-7"

MAKAROV, V.M.

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S/129/60/000/08/002/009

E073/E135

AUTHORS: Gulyayev, A.P. (Doctor of Technical Sciences, Professor, and Makarov, V.M. (Engineer)

TITLE: Martensitic Transformation, Mechanical Properties and Structure of Stainless Steels of the Austenite-Martensite Class

PERIODICAL: Metallovedeniye i termicheskaya obrabotka metallov, 1960, No 8, pp 3-9 (+ 1 plate)

TEXT: The steels of this type which are most widely used in the U.S.S.R. are: the steel Kh17N7Yu, which corresponds to the American steel 17-7-PH, and the steel Kh15N9Yu (E1904 or SN2). The authors of this paper investigated the steel Kh15N9Yu, which has the following composition: 0.07% C; 14.9% Cr; 8.9% Ni; 1% Al. The kinetics of martensitic transformation were studied by means of the anisometric method. It was found that after quenching from 800 °C the maximum temperature of the M_{1n} point equalled 80 °C, and the maximum quantity of martensite was 30% in the case of cooling to 20 °C and 70% in the case of cooling to -70 to -80 °C. If it is desired that after quenching the

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Martensitic Transformation, Mechanical Properties and Structure of
Stainless Steels of the Austenite-Martensite Class

structure should remain an austenitic one and that the transformation should occur only in the case of under-cooling to sub-zero temperatures, the initial heating temperature should be about 975 °C. In this case under-cooling to -70 °C is not enough and for full martensitic transformation temperatures as low as -100 to -120 °C are required. After quenching from temperatures above 950 °C the M_{1n} point is located at below zero temperatures and the structure of the steel will be an austenitic one (possibly with a certain quantity of ϵ -martensite). As regards the influence of the speed of cooling, the results obtained for this steel are in agreement with the influence observed in earlier work (Ref 4) on the steel Kh12F1⁶ (1.5% C, 12% Cr, 1% V). Rapid cooling in the martensite range suppresses martensitic transformation during cooling but intensifies the transformation under isothermal conditions and during heating. The data on the results obtained from the various heat treatments are entered in Table 1. The influence of various heat treatments on the mechanical properties was also investigated and the results are entered in Table 2 and plotted in Figs 6 and 7.

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E073/E135

Martensitic Transformation, Mechanical Properties and Structure of
Stainless Steels of the Austenite-Martensite Class

It was found that the best mechanical properties are obtained for
steels containing 35-40% aged martensite and 60-65% austenite.
These are obtained by quenching to produce an austenitic structure
and subsequent treatment at sub-zero temperatures and ageing.
Quenching from lower temperatures, of about 800 °C, will yield a
similar martensite to austenite ratio but the carbides which are
rejected along the grain boundaries reduce the ductility and the
impact strength of the material. The structure of the steel was
investigated by magnetic measurements and also means of an
electron microscope. In Fig 9 microstructure photos (X 5000) are
reproduced for material which was quenched from 975 °C, and also
for material quenched from 750 °C.
There are 9 figures, 2 tables and 8 references Soviet and
3 English.

Card 3/3

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SHAPIRO, M.B., inzh.; MAKAROV, V.M., inzh.

Induction hardening of the pinions of low module reducing gears.
Trudy NIIKHIMMASH no.34:26-32 '60. (MIRA 14:1)
(Gearing)

MAKAROV, V.M.

Furnaces and apparatus for chemical industries. Biul.tekh.-ekon.
inform. no.10:18-21 '61. (MIRA 14:10)
(Chemical industries--Equipment and supplies)

MAKAROV, V.M.

It is now up to the technicians of the Ural Chemical Machinery Plant. Bum.prom. 36 no.3:10-11 Mr '61. (MIRA 14'4)

1. Glavnyy konstruktor Ural'skogo zavoda khimicheskogo mashinostroyeniya.

(Sverdlovsk--Paper industry--Equipment and supplies)

MAKAROV, M.M., EPSHTEYN, V.G., MAKAROV, V.M.

The new rubber recovery method using a heated air jet.

Report submitted for the 4th Scientific research conference on the Chemistry and technology of synthetic and natural rubber. Yaroslavl, 1962

344.51

S/184/62/000/007/00. 0004

DO41/D112

18.8310
11.1160

AUTHORS: Shapiro, M.B., Kristal', M.M., Moskvina, N.I. Makarov, M.M.
Engineers

TITLE: High-strength acid-proof steel for chemical machine building

PERIODICAL: Khimicheskoye mashinostroyeniye, no. 2, 1962, 20-51

TEXT: The authors tested ~~X15H9H~~ (Kh15N9Yu) high-strength austenitic martensite steel at NIIKhIMMASH in order to determine its suitability for use in machines operating in aggressive media. The effect of thermal treatment on the structure of the steel, on its mechanical properties and on its resistance to corrosion in various media was investigated. Cold treatment increased the hardness. After normalizing from 1,000°C, the steel had a purely austenite structure; reducing the normalizing temperature to 950°C and below, increased the amount of carbides and changed the position of the martensite point and the quantity of formed martensite. After cold treatment and aging, the hardness values were higher at all temperatures. The

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High-strength acid-proof ...

S/184/62/000/001/004/004
D041/D112

maximum strength was obtained after the aging of steel which was previously normalized at 750-800°C and cold-treated. The maximum strength was obtained after aging at 450-475°C for 1 hour. Maximum plasticity and toughness were obtained by aging at 350°C, whereby the strength was still high enough. The corrosion tests were carried out on sheets, forgings, bolts and welded specimens of various thicknesses, heat-treated at various normalizing and aging temperatures. The maximum corrosion rate was observed in HNO₃ as well as in an acid solution of copper nitrate after aging at 550°C. An increase of the aging time from 1 to 5 hours (at 475°C) showed that the corrosion resistance decreased in 65-% HNO₃ by approximately 10 times. The greatest corrosion resistance was observed after aging at 1,000 to 1,100°C, when the steel had an almost pure austenitic structure. The greatest intercrystalline corrosion was observed after normalization at 750°C. The steel was successfully used in some test machines developed by the NIIKhimMASH, and is recommended for the valve plate of compressor. Further research is needed before the steel can be used for casings of turbines. There are 7 figures, 2 tables, and 1 reference to Soviet literature.

Card 2/3

High-strength acid-proof ...

3/16/61, OOC, NO. 1, 1961.
D041/D11.

Soviet-bloc. The two references to English-language publications that follows: I. Halbig, O.B. Ellis, Observation on the corrosion resistance of tough strength stainless steels for aircraft, "Corrosion", Vol. 14, No. 1, 1958; W.K. Boyd, H.A. Pray, "Corrosion", Vol. 17, No. 1, 1961.

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8/277/63/000/004/004/013
A004/A127

AUTHORS: Shapiro, M.B., Moskvina, N.I., Kristal', M.M., Makarov, V.M.

TITLE: New high-strength stainless steel

PERIODICAL: Referativnyy zhurnal. Otdel'nyy vypusk. 48. Mashinostroitel'-nyye materialy, konstruktii i raschet detaley mashin, no. 4, 1963, 12, abstract 4.48.80. (Tr. Vses. n.-i. i konstrukt. in-t khim. mashinost., 1962, no. 40, 62 - 79)

TEXT: The authors present the results of investigating the effect of heat treatment (normalizing, cold treatment, ageing) on the mechanical properties and corrosion resistance of the new X15H9D (Kh15N9Yu) precipitation-hardened stainless steel having the following composition (in %): C 0.05 - 0.09, Si 0.34 - 0.59, Mn 0.31 - 0.6, Cr 14.3 - 16, Ni 7.9 - 9.5. It is pointed out that an optimum combination of strength, ductility, notch toughness and corrosion resistance of the Kh15N9Yu steel is obtained after the following heat treatment: normalizing at 975°C, cold treatment at -70°C for 2 hours, ageing at 350 - 400°C for 1 - 2 hours; then the following values

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New high-strength stainless steel

8/277/63/000/004/004/013
A004/A127

are obtained: $\sigma_s > 128$, $\sigma_B > 90$ kg/mm², $\delta > 12\%$, $\psi = 40\%$, and $a_K > 5$ kgcm/cm². After this optimum heat treatment of the steel it does not tend to inter-crystalline corrosion and is not much inferior to the 1X18H9T (1Kh18H9T) steel as to general corrosion resistance in a number of media.

[Abstractor's note: Complete translation.]

Card 2/2

OL'SHANETSKIY, M.S.; KOGAN, M.S.; MAKAROV, V.M.

"Problems of the utilization of worn out tires" by I.I.Tugov.

Reviewed by M.S.Ol'shanetskiy, M.S.Kogan, V.M.Makarov. Kauch.

1 rez. 23 no.2:57-58 P '64.

(MIRA 17:3)

ZHELUDEV, I.S.; MAKAROV, V.M.

Measuring pressures resulting from gas mixture explosions with a piezoelectric gauge. Kristallografiia 1 no.3:370-372 '56.

(MLBA 9:12)

1. Tsentral'nyy nauchno-issledovatel'skiy institut protivopozharnoy oborony.

(Piezometer) (Explosions)

MAKAROV V.M.

120-3-27/40

AUTHORS: Zhdanov, S.M., Makarov, V.M. and Khaykin, M.S.

TITLE: An Instrument for the Signalization of the Appearance of Weak Ultraviolet Light (Pribor dlya signalizatsii poyavleniya slabogo ul'trafiioletovogo sveta)

PERIODICAL: Priory i Tekhnika Eksperimenta, 1957, Nr 3, pp.93-96 (USSR)

ABSTRACT: The instrument responds to ultraviolet light in the range $\lambda = 2000-3000 \text{ \AA}$. The sensitive element is a photon counter COK-1 and the electronic circuit is completely transistorised. The instrument consists of a sensitive element, an electronic circuit and a relay. The counter has a pure copper photocathode having a sharp cutoff at about 3000 \AA . The envelope of the counter is made of quartz glass which is transparent to UV for $\lambda > 2000 \text{ \AA}$. Preliminary experiments have shown that the counter COK-1 is highly sensitive to radiation from an open flame but has a negligible sensitivity to scattered visible light in a normally illuminated room. In these conditions the counting rate from visible light was about 200 counts per minute while the count rate due to a flame 25 mm high produced by a candle at a distance of 10 meters gave a counting rate of 6000 counts per minute, (Fig.1). The electronic circuit is designed so that it will

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110-3-77/0

An Instrument for the Signalization of the Appearance of Weak Ultraviolet Light.

give a signal on the appearance of fire when the count rate due to it is 30 times the background. The circuit consists of an amplifier, pulse shaper, DC amplifier and a sensitivity adjustment. The circuit is shown in Figs.2-4. The instrument has been produced for operation either from the mains or a battery. The size of the instrument is 225 x 120 x 65 mm³ (Fig.5). The following persons collaborated: P.P. Zaytsev, N.A.Selitrennikov and A.I.Shal'nikov. There are 6 figures, no tables and 3 references, 2 of which are Russian and 1 English.

ASSOCIATION: Central Scientific Research Institute of Fire Prevention (Tsentral'nyy nauchno-issledovatel'skiy institut protivopozharnoy oborony)

SUBMITTED: January 16, 1957.

AVAILABLE: Library of Congress.

Card 2/2 1. Light ultraviolet-Detection 2. Instrumentation-Operation

ZHDANOV, S., kandidat tekhnicheskikh nauk; MAKAROV, V., inzhener.

Automatic fire alarms sensitive to ultraviolet rays. Posh.delo 3
no.8:16-17 Ag '57. (MIRA 10:8)
(Fire alarms) (Ultraviolet rays)

MAKAROV, V.

ZHDANOV, S., kand. tekhn. nauk; MAKAROV, V., inzh.

High-speed automatic fire alarms activated by smoke. Pozh. delo 4
no.1:21-24 Ja '58. (MIRA 11:1)

(Fire alarms)

ZHDANOV, S.M., kand.tekhn.nauk; MAKAROV, V.M., inzh.

Infrared rays and their use in fire alarm systems. Inform.sbor.

TsNIPPO no.3:112-122 '59.

(MIRA 14:3)

(Infrared rays—Industrial applications)(Fire alarms)

ZHADANOV, S., kand.tekhn.nauk; MAKAROV, V., inzh.

Fire alarm equipped with semiconductors. Pozh.delo 5 no.9:
24-25 S '59. (MIRA 13:1)
(Fire alarms)

ZHDANOV, S., kand.tekhn.nauk; MAKAROV, V., inzh.

Automatically controlled differential fire detector.
Posh.delo 5 no.12:23-24 D '59. (MIRA 13:4)
(Fire prevention--Equipment and supplies)

ZHDANOV, Sergey Mikhaylovich, kand.tekhn.nauk; MAKAROV, Viktor Matveyevich;
SHESTAKOV, Aleksandr Leonidovich; POLUKHIN, V.P., red.; KOROGODIN,
A.S., red.izd-va; NAZAROVA, A.S., tekhn.red.

[Automatic fire-protective signaling system] Avtomaticheskaya
pozharная signalizatsiya. Moskva, Izd-vo M-va kommun. khoz.RSFSR.
1960. 159 p. (MIRA 14:2)

(Fire alarms)

12 2200

27986
S/194/61/000/004/023/052
D249/D302

AUTHORS: Zhdanov, S. and Makarov, V.

TITLE: The automatic installation ППАМ9 (Fire)

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika,
no. 4, 1961, 22, abstract 4 V156 (Pozharn. delo,
1960, no. 5, 22-23)

TEXT: A description is given of the automatic fire alarm installation type ППАМ9 (Fire) for detecting naked fire. The installation can control a premises with a floor area of up to 6000 m² and consists of the receiving station ПАМ (PAI)-10-20, a group of fire indicators type АМН (AIP)-1 and the supply unit type БП (BP)-17. The installation is sensitive to the ultraviolet radiation of the flame, and is equipped with a failure indicator system 5 figures
[Abstracter's note: Complete translation]

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ZHDANOV, S., kand.tekh.nauk; MAKAROV, V., inzh.

New automatic fire alarm systems. Pozh.delo 6 no.7:25-26 J1
'60. (MIRA 13:7)

(Fire alarms)

ZEDANOV, S., kand.tekhn.nauk; MAKAROV, V., inzh.; VESKLOV, A., inzh.

Fast acting electric drive for automatic fire-extinguishing
systems. Posh. delo 6 no. 11:23-24 N '60. (MIRA 13:12)
(Fire extinction) (Automatic control)

ZHDANOV, S., kand.tekhn.nauk; MAKAROV, V., inzh.

Automatic SPTU-1 fire alarm system. Pozh.delo 7 no.6:20-21 Je '61.
(MIRA 14:6)

(Fire alarms)

MAKAROV, V.M., inzh.

New automatic fire alarm systems. Nauka i zhizn' 28 no.4:76 Ap
'61. (MIRA 14:5)

(Fire alarms)

VOLKOV, Oleg Mikhaylovich; PRIKHOD'KO, Leonid Leonidovich; MAKAROV,
V.M., red.; KOMONOV, A.S., red.isd-va; LELYUKHIN, A.A.,
tekhn. red.

[Fire prevention measures in the operation of electronic
calculating machines] Pozharnaya profilaktika pri ekspluatatsii
elektronnykh vychislitel'nykh mashin. Moskva, Isd-vo M-vo
kommun.khoz. RSFSR, 1962. 50 p. (MIRA 16:4)
(Electronic computers) (Fire prevention)

SMIRNOV, Vasilii Mikhaylovich; MAKAROV, V.M., red.; CHEKRYZHOV, V.A.,
red. izd-va; LELYUKHIN, A.A., tekhn. red.

[Automation and the fire safety of technological processes]
Avtomatika i pozharnaya bezopasnost' tekhnologicheskikh protses-
sov. Moskva, Izd-vo M-va kommun.khoz.RSFSR, 1962. 199 p.

(MIRA 16:2)

(Factories—Fires and fire prevention) (Automation)

MAKAROV, V.M.

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BOOK EXPLOITATION

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Akademiya nauk SSSR. Institut gornogo dela

The use of seismoacoustic methods in mining (Primeneniye seysmoakusticheskikh metodov v gornom dele) Ed. by M. S. Antsyferov. Moscow, Izd-vo "Nauka," 1964. 186 p. illus. Errata printed on the back cover. 1300 copies printed.

TOPIC TAGS: mining engineering, seismic prospecting, seismic instrument, phonon acoustics, seismoacoustic pulse

PURPOSE AND COVERAGE: This is a collection of articles summarizing the results of work done by the Laboratory of Geophysical Research of the Mining Institute (Imeni A. A. Shchegolevskiy) and the Scientific Seismoacoustic Station of the Donetsk Severodonetsk. The research was basically conducted at the coal mines of the Donet Basin, where dangerous sudden outbursts of coal and gas occur. The authors give data on the design and manufacture of various seismoacoustic instruments, used in both laboratory and field investigations. Results of these investigations are analysed, emphasising their

Card 1/3

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importance for the theory of dynamic phenomena in mines and for the prognosis of the danger zones of possible sudden outbursts. The book is of interest to miners and geophysicists concerned with the application of geophysical methods in coal and ore mines.

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AM5023903

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^{44,55} Konstantinova, A. G., ^{44,55} L. G. Mysina, and V. S. Ivanov. Analysis of energy generated by seismoacoustic processes resulting from sudden outbursts of coal and gas -- 150 ¹²

Konstantinova, A. G., and L. G. Mysina. Relative changes in the parameters of elastic pulses before sudden outbursts of coal and gas -- 154

Konstantinova, A. G. Investigation of the parameters of elastic vibrations generated in the rock samples under a uniaxial load -- 165

^{44,55} Konstantinova, A. G., and E. V. Petrosyants. ^{44,55} Seismoacoustic method of investigating the effect of an explosion on the roof of a mine -- 173 ^{44,55}

Antsylerov, N. S. Electrostatic effect in rocks -- 180

SUB CODE: *GO, ES, GP/*

SUBMITTED: 26Nov64

NO REF SOV: 113

OTHER: 003

Card 3/3 *PC*

L 1927-66 EPA(s)-2/ENI(m)/EPF(c)/EPF(n)-2/EWA(d)/T/EWP(t)/EWP(z)/EWP(b) NJW/JD/

ACCESSION NR: AP5023777

HW/JG/NB/DM

UR/0069/65/019/003/0296/0300
621.039.534.6

4.0
44

AUTHOR: Subbotin, V. I.; Kirillov, P. L.; Koslov, F. A.; Ivanovskiy, M. M.;
Makarov, V. N.

TITLE: Removal of the products of interaction with water from sodium in a circulation loop

SOURCE: Atomnaya energiya, v. 19, no. 3, 1965, 296-300

TOPIC TAGS: sodium, sodium compound, nuclear power plant, liquid metal cooled reactor

ABSTRACT: In high-capacity nuclear power plants, the use of a "sodium-water steam generator with a single heat-transfer wall is very promising. However, a substantial amount of water may reach the sodium loop, and an important problem is the removal of products formed by the reaction with water from the sodium. The present study is made in a standard sodium circulation loop. The removal of sodium hydride is investigated by introducing hydrogen and using a cold trap to filter the sodium. Experiments on removal of products of the reaction with water



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ACCESSION NR: AP5023777

vers similar. The data show that the purification of sodium involving removal of hydrogen, H_2O and $2HCl$ by means of the cold trap and the monitoring of the content of these substances are fully satisfactory. No signs of corrosion are observed on 1KH18W9T steel at 400C after a 2000-hr. contact with the sodium-water reaction products. Orig. art. has: 3 figures.

ASSOCIATION: none

SUBMITTED: 02Mar65

ENCL: 00

SUB CODE: NP, GC

NO REF SOV: 003

OTHER: 001

mlr
2/2

MAKAROV, V.M., inzh.; BIKCHENTAYEV, T.A.; KADKEVICH, V.N.;
SAMSONOVA, A.A.; ZASTROVSKIY, F.P., kand. tekhn.nauk,
retsensent; KUBAREV, V.I., inzh., red.; TAIROVA, A.L.,
red.izd-va; MODEL', B.O., tekhn.red.; UVAROVA, A.F.,
tekhn.red.

[Rubberized and bimetallic machines and devices for the
chemical industry; design and manufacture] Gummirovan-
nye i bimetallicheskie mashiny i apparaty khimicheskikh
proizvodstv; konstruirovaniye i izgotovleniye. [By] V.M.
Makarov i dr. Moskva, Mashgiz, 1963. 274 p.
(MIRA 17:2)

YARTSEV, V.A.; MAKAROV, V.M.

Readers' conference. Kauch. i rez. 22 no.6:57 Je '63.
(MIRA 16:7)

(Rubber industry—Periodicals)

L 22254-66 EWT(1)/EWT(M)/EWP(t) IJP(c) GG/JD
ACC NR: AP6010974 SOURCE CODE: UR/0056/66/050/003/0546/0550

AUTHOR: Lasarev, B. G.; Lasareva, L. S.; Makarov, V. M.; Tyroskina, N. S. 59
8

ORG: Physicotechnical Institute, Academy of Sciences, Ukrainian SSR (Fiziko-tehnicheskii Institut Akademii nauk Ukrainsskoy SSR)

TITLE: Effect of impurities on the variation of the superconducting transition temperature of thallium with pressure 2

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 50, no. 3, 1966, 546-550 2

TOPIC TAGS: superconductivity, superconductor, critical temperature, transition temperature, thallium, indium, temperature dependence

ABSTRACT: The effect of indium impurities on the dependence of the superconducting transition temperature ($T_c(p)$) of thallium on pressure was investigated. It was found that the effect of indium (which has the same valency as thallium) on the $T_c(p)$ dependence of thallium is similar to that of antimony and bismuth (the valence of which is greater than that of thallium). For thallium alloys containing 3.57 and 7.15 at.% of indium, the dependence $T_c(p)$ is linear, the values of dT_c/dp being $1.2 \cdot 10^{-5}$ and $1.6 \cdot 10^{-5}$ deg/atm, respectively. These values are close to that for pure thallium ($dT_c/dp = 1.4 \cdot 10^{-5}$) at pressures from 20,000 to 28,000 atm. The

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ACC NR: AP6010974

experimental data obtained confirm earlier predictions on the sensitivity of the electron spectrum of thallium to impurities and pressure. (CS)

SU CODE: 204/ SUMM DATE: 04Oct65/ ORIG REF: 003/ OTH REF: 002

Card 2/2

MAKAROV, V.N., inzhener.

Protecting the V-belt transmission of pump drive stands.
Bezop.truda v prom. 1 no.8:24 Ag '57. (MLRA 10:8)
(Azerbaijan--Oil well pumps--Safety measures)

SOV/92-58-6-18/30

AUTHOR: Makarov, V.N., Chief of the Mining and Technical Inspection of West-
~~ern Azerbaijan~~

TITLE: Our Comments on Kartashov's Hoist (Nashi zamechaniya k elevatoru
Kartashova)

PERIODICAL: Neftyanik, 1958, Nr 6, pp 20-21 (USSR)

ABSTRACT: Referring to the article "New Systems of Equipment and Tools Used in Oilwell Maintenance", by A.A. Daniyelyan, published in previous 1958 issues of Neftyanik, the author states that the standardization of oilwell maintenance equipment has acquired considerable importance. However, the author disagrees with the views expressed by A.A. Daniyelyan, who contended that the problem of developing a new light-weight hoist with a dependable locking device has been successfully solved by V.I. Kartashov. The light hoist devised by Khalatyan and manufactured by the factory Oktyabrskaya revolyutsiya, does not weigh 42 kg., as A.A. Daniyelyan states, but only 24.3 kg. In addition, the author maintains that the locking device with which the Kartashov hoist is equipped is not as good as that of the hoist of the Khalatyan type. Furthermore, the hoist devised by Kartashov has a number of defects and as a result it is strongly criticized by the oilmen of Azerbaydzhan. All efforts to eliminate these defects were unsuccessful, and in January 1958 the Azinmash asked the factory manufacturing this hoist to redesign its locking device and to continue experimental

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Our Comments on Kartashov's Hoist

SOV/92-58-6-18/30

testing. Moreover, the temporary use of the Khalatyan light-weight hoist of 25 and 50 ton capacity was authorized by Azinmash. It appears that the hoist of the Kartashov type can be introduced only when its locking device is changed. Therefore, the author is surprised at Daniyelyan's statement that the Azinmash has solved the problem of developing the new light-weight hoist, and he thinks that there is no justification for such a statement.

ASSOCIATION: Zapadno-Apsheeronskaya gorno-tekhnicheskaya inspektsiya Azerbaydzhan-skogo okruga (The Mining Technical Inspection of the Western Apsheeron Region of the Azerbaydzhan District)

1. Petroleum industry—USSR
2. Hoists—Design
3. Hoists—Performance

Card 2/2

PERVOVA, L.Ya.; MAKAROV, V.N.

Generation-recombination noise in p-type germanium containing
sinc. Radiotekh. i elektron. 7 no.8:1434-1439 Ag '62.
(MIRA 15:8)

(Semiconductors)

CHEKOTILLO, A.M.; TSVID, A.A.; MAKAROV, V.N.; STOTSENKO, A.V., prof.,
doktor geograf.nauk, otv.red.; OVECHKINA, L.S., red.; PILATOVA,
O.M., tekhn.red.

[Icings in the U.S.S.R. and their control] Maledi na territorii
SSSR i bor'ba s nimi. Blagoveshchensk, Amurskoe knizhnoe izd-vo,
1960. 204 p. (MIRA 13:12)

(Ice)

MAKAROV, V.N.

Design and operation of anti-icing structures. Transp. strci.
12 no.4:14-17 Ap '62. (MIRA 15:5)

1. Glavnyy spetsialist otdela izyskaniy Giprotramtransstroya.
(Railroads--Snow protection and removal)

MAKAROV, V.N., inzh.

Twist of the flow behind a turbine stage. *Energomashinostroenie*
10 no.11:43-44 N '64 (MIRA 18:2)

MAKAROV, V.N.

Redeposited ores of the Yashovlevo deposit in the Kursk Magnetic Anomaly as a guide to ores of the Krivoy Rog type. Sbor. nauch. trud. KURI no.13:26-29 '62. (MIRA 16:8)

(Kurst Magnetic Anomaly—Iron ores)

MAKAROV, V.N.

Magnetite in the redeposited ores of the Yakovlevo deposit
in the Kursk Magnetic Anomaly. Sbor. nauch. trud. KGBI no.13:
37-41 '62. (MIRA 16:8)

(Kursk Magnetic Anomaly—Magnetite)

KUZNETSOVA, M.N.; MAKAROV, V.N.

Mylonitization of rocks of the Yakovlevo deposit in the Kursk
Magnetic Anomaly. Sbor. nauch. trud. KGRI no.13:47-52 '62.
(MIRA 16:8)
(Kursk Magnetic Anomaly---Mylonite)

MAKAROV, V.N.

Studying mineralogy and petrography of clastic ores in the Yakov-
levskoye deposit of the Kursk Magnetic Anomaly. Sbor. nauch.trud.
KGRI no.20(3):44-53 '63. (MIRA 16:9)

MAKAROV, V.N.; DOMAREV, D.S.

Etched structures of hematites and martites from ores of the upper series in the Yakovlenskoy deposit in the Kursk Magnetic Anomaly.
Sbor. nauch.trud. KGRI no.20(3):56-57 '63. (MIRA 16:9)

DOMAREV, D.S.; TARANETS, V.I.; MAKAROV, V.N.

Origin of ores of the upper series in the Yakovlenskoye deposit of
the Kursk Magnetic Anomaly. Sbor. nauch.trud. IGRI no.20(3):57-60
'63. (MIRA 16:9)

MARTYNENKO, L.I.; ZINTSOVA, Ye.S.; MAKAROV, V.N.; KUZNETSOVA, M.N.;
KONDRAT'YEVA, D.N.; SOVA, N.G.; TARANETS, V.I.; DOMAREV, D.S.

Stratigraphy of the iron ore complex in the Yakovlevo deposit.
Sbor.nauch.trud.KGRI no. 21:24-29 '63. (MIRA 17:7)

MARTYNYENKO, L.I.; MAKAROV, V.N.; KUZNETSOVA, M.N.; SOVA, N.G.;
TAFANETS, V.I.; DOMATEV, S.S.; KONURAT'YUKA, V.N.

Association of minerals in the group of iron oxides in rocks
and ores of the Yakovlevo deposit in the Kursk Magnetic Anomaly.
Sbor.nauch.trud. KGRI no. 21:29-36 '63. (MIRA 17:7)

MAKAROV, V.N.; DOMAREV, D.S.

Study of the physical and mechanical properties of ores of
the Yakovleva deposit in the course Magnetic Anomaly. St. r.
nauch.trud. VGI no. 21347-52 (1962) (MIRA 1712)

MAKAROV, V.N.; KONDRAT'YEVA, D.N.; TARANETS, V.I.

Mineralogy of supergene chlorites from shales of the
Yakovlevo deposit in the Kurs' Magnetic Anomaly. Sbor.nauch.
trud. KGU no. 21:39-47 '63. (MIRA 17:7)

U.S. AIR FORCE

Mineralogy of the Earth's Crust
The Earth's Crust: A Mineralogical Approach
54-57 163.

MAKAROV, V.N. [Makarov, V.V.] TARANETS, V.I. [Taranets, V.I.]

Studying chlorites from the Upper series of the Yakovlevskoye
iron ore deposit in the Kursk Magnetic Anomaly. Dop. AN USSR
no.10:1363-1365 '64. (MIRA 17:12)

1. Krivorozhskiy gornorudnyy institut. Predstavleno akademikom
AN USSR V.G. Bondarchukom [Bondarchuk, V.H.].

MAKAROV, V.N. [Makarov, V.M.]; KONDRAT'YEV, D.N. [Kondrat'lyev, D.N.],

Alteration of tourmaline in the weathering surface of the Yezovsk
iron ore deposit in the Kursk Magnetic Anomaly. Dep. AN UkrSSR no. 1
84-87 1965. (Ukrainian)

1. Krivobaznskiy gornorudnyy institut. (Krivobaznskiy gornorudnyy
AN UkrSSR V.G. Bondar chukom [Bondar chuk, V.H.]).

MAKAROV, V.; SIMONOV, V.; VASIL'YEV, A.A., red.; KOROLEV, A.V.,
tekhn. red.

[Mechanized take off of gliders] Mekhanizirovannyi vzlet plana-
nera. Izd. 2., perer. i dop. Moskva, Izd-vo DOSAAF, 1961. 181 p.
(MIRA 15:4)

(Gliding and soaring)

SAPOZHNIKOV, Ye.; ROMANOV, N.; MAKAROV, V., redaktor; MUNTIAN, T.,
tekhnicheskiy redaktor.

[Learn to fly a glider] Uchi's' letat' na planere. Moskva, Izd-vo
Dosaaf, 1954. 94 p. [Microfilm] (MLRA 8:2)
(Gliders (Aeronautics)--Piloting)

"MAKAROV", .

AID P - 385

Subject : USSR/Aeronautics
Card 1/1 Pub. 58 - 3/4
Author : Makarov, V.
Title : Some Problems of the Theory of Glider Take-Off by Means
of a Mechanical Hoist
Periodical : Kryl. rod., 8, 8-10, 1954
Abstract : The article explains some theoretical problems connected
with mechanically assisted glider take-off. Photos,
diagrams, tables, formulae.
Institution : None
Submitted : No date

PHASE X TREASURE ISLAND BIBLIOGRAPHICAL REPORT AID 726 - X

BOOK

Authors: MAKAROV, V., and SIMONOV, V., compilers Call No.: AP666890

Full Title: GLIDING SPORT. COLLECTED ESSAYS

Transliterated Title: Planernyy sport. Sbornik statey

PUBLISHING DATA

Originating Agency: None

Publishing House: DOSAAF (All-Union Voluntary Society for the Promotion of the Army, Aviation and the Navy)

Date: 1955

No. of pp.: 92

No. of copies: 18,000

Editorial Staff: None

PURPOSE AND EVALUATION: The purpose of this booklet is not stated. It appears to be an attempt to give the reader a selection of interesting articles. These articles do not have any special value. However, they are of interest as a popular technical contribution to anybody interested in gliding.

TEXT DATA

Coverage: This booklet consists of a compilation of 12 articles reprinted from the newspaper "Patriot rodiny" and the periodical "Kryl'ya rodiny". Unspecified changes were made in some of the articles.

Table of Contents

1. Anokhin, S., Hero of the Soviet Union, "Soviet Gliding Sport"

Pages

3-11

Planernyy sport. Sbornik statey

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- The author gives a brief history of the development of gliding in Russia. Some achievements of 1953 are mentioned and a number of names are given.
2. P'yetsukh, A., "From Experience in Soaring Flights" 11-25
In the first part of his article, the author describes in general terms the technique of the flight of a glider. In the second, he analyses the conditions of proper gliding on the example of two gliders, the "A-9" and "PAI-6". He gives data on their rate of descent and optimum speed when the wind is 0 or 10 m/sec. He also gives data of the analysis of actual flights of well-known glider pilots. He describes various methods of flying in ascending currents and gives numerical data taking as examples the same two gliders, the "A-9" and "PAI-6". Diagrams, graphs, tables.
3. Mareyeva, Z., "Flights in Cumulus Clouds" 25-30
The author takes the example of flights on gliders "A-2" and "PAI-6" to describe the general features and conditions of gliding and soaring flight. She also gives advice on how to use ascending currents below and inside cumulus clouds. Diagrams.

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4. Simonov, V., "Quicker Use of Undulating Air Streams"

30-39

The author discusses ascending and non-ascending undulating air streams found in the troposphere and in stratosphere. Ascending undulating air streams may be formed on very rare occasions between two air masses of different density flowing with different speed in different directions. Non-ascending air streams are formed by the deformation of the stream due to the flow around a mountain or a mountain range. The author analyses this phenomenon and gives numerical data of observations. Names of scientists and some localities are mentioned. Diagrams, photos.

5. Simonov, V., "Soaring Flights in Undulating Air Streams"

39-50

The author describes meteorological conditions during which undulating air streams are formed in the upper regions of the atmosphere and gives the characteristics of this phenomenon. He analyses suitable soaring methods to be used under these conditions, mentions glider types, and gives examples of this kind of soaring. Diagrams.

6. Mareyeva, Z., "At an Altitude of 6,480 meters"

50-53

The author describes the formation of the undulating air stream, which she calls the oscillations of the

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- stream of inversion. She gives an example of its occurrence in one of the Polish soaring regions, and describes her flight in it.
7. P'yetsukh, A., "The Spin of a Glider" 53-57
The author analyses the spin of a glider. He describes, in particular, the forces acting on the glider, angular velocities, stresses in the wing, the rigging, and the behaviour of the gliders PAI-6 and SAKh in a spin.
8. Afnas'yev, I., "Flying Characteristics of Gliders." 58-62
Comparative flying characteristics of a number of gliders were measured by a group of well-known glider pilots whose names are given. The following gliders were investigated: A-2, Sh-17, PAI-6, VA-3, and A-9. Tables of comparative data are given.
9. Makarov, V., "Some Problems of the Theory of the Winch- 62-73
Assisted Take-off of a Glider"
The author states that the use of winches for the take-off of gliders became very popular in 1954. The theoretical data of this kind of take off are not yet elaborated. In this article, the author is concerned only with basic problems of theory. In particular, he discusses the diagram of forces acting on a glider during the take-off,

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Planernyy sport. Sbornik statey

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climbing, and the necessary speed during climbing.
Diagrams, tables.

10. Mavrichev, V., "Towing Gliders by Aircraft"
(Experiences of a towing pilot)

73-80

The author stresses the importance of towing in the achievements of the glider pilot. He gives examples of the towing pilot's contribution in several record-breaking flights, and mentions names.

11. Fadeyev, N., "Build an Outstanding Training Glider
(for Our Sportsmen)"

80-87

This is a report with comments on the results of a competition for the best design of a training glider. Characteristics and diagrams of 4 gliders are given. Names are mentioned.

12. Kunitskiy, P., "Custody of Wooden Aircraft and Gliders
in Autumn and Winter"

87-99

The author gives basic rules of keeping of wooden aircraft and gliders. He mentions several types.

No. of References: None

Facilities: None

5/5

MAKAROV, V

AID P - 3297

Subject : USSR/Aeronautics
Card 1/1 Pub. 135 - 3/20
Author : Makarov, V., Lt. Col.
Title : Interception of a maneuvering target
Periodical : Vest. vozd. flota, 11, 16-18, N 1955
Abstract : The author discusses tactical problems of interception of air targets by jet aircraft. He describes various cases and gives some figures. Diagrams.
Institution : None
Submitted : No date

~~MAKAROV, Vyacheslav Nikolayevich~~; SIMONOV, Vitaliy Yakovlevich; VASIL'YEV, A..
redaktor; ANDRIANOV, B., tekhnicheskii redaktor

[Mechanically powered take-off for gliders] Mekhanizirovannyi vzlet
planera. Moskva, Izd-vo DOSAAF, 1956. 140 p. (MLRA 9:9)
(Gliding (Aeronautics))

1(6)

PHASE 1 BOOK EXPLOITATION

SOV, 2875

Makarov, Vyacheslav Nikolayevich

Metodika obucheniya na odnomestnom planere (Flight Training Method For a Single Seat Glider) Moscow, Izd-vo DOSAAF, 1957. 84 p. Errata slip inserted. 7,000 copies printed.

Ed.: A.A. Vasil'yev; Tech. Ed.: L.T. Tsigel'man.

PURPOSE: This book is intended to aid glider pilot instructors of the DOSAAF in understanding the basic aspects of training methods for single-seat gliders and utilizing them for instruction.

COVERAGE: This book discusses the steps in a systematic program of training glider pilot instructors. Equipment, theoretical instruction, methods for testing and detailed outlines of training programs are given.

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MAKAROV, V.

85-58-6-23/43

AUTHOR: Makarov, V., Master of Sports

TITLE: Single-Seater Glider for Basic Training (V osnovu obucheniya-odnomestnyy planer)

PERIODICAL: Kryl'ya rodiny, 1958, Nr 6, p 20 (USSR)

ABSTRACT: According to the author, the development of glider sports on a mass scale depends upon the practical training of pilots on a light BRO-11 single-seater glider. The experience of the Moscow DOSAAF organization in the past two to three years suggested that team work be conducted in 2 stages. The first stage should involve glider teams training at an aviation organization and preparing a staff of public instructors for training pilots on a single-seater glider. The second stage would make the most efficient use of the capacities of public instructors who, following 2 years of training, would operate independently, although under the control of a training organization. In the winter of 1957 each glider group trained 150 to 160 glider pilots who reached altitudes of 15 to 20 m. using one-way radio communication; the public instructors reached up to 50 m. A total of 32,000 flights was made without any accidents.

1. Civil aviation—USSR

Card 1/1

FILIPPOVA-NITRIKHINA, Z.L., kandidat meditsinskikh nauk; **MAKAROV, V.N.**,
sav. elektrokardiograficheskim kabinetom

Case of chronic paroxysmal tachycardia in an 11-year-old boy.

Pediatrics no.5:78-81 S-O '54.

(MIRA 7:12)

1. Is kliniki gosptal'noy pediatrii (dir. K.F.Popov) pediatriche-
skogo fakul'teta II Moskovskogo meditsinskogo instituta imeni I.V.
Stalina na base Detskoy bol'nitsy imeni N.F.Filatova (glavnyy
vrach M.N.Kalugina)

(TACHYCARDIA, PAROXYSMAL, in infant and child,
case report)

MAKAROV, V.N.

TISHINA, Ye.M., kand.med.nauk; YEVSIKOVA, Z.P.; MAKAROV, V.N.

Paroxysmal tachycardia in a two-and-a-half-year-old child, complicated by hemiplegia and infarct-type changes in the electrocardiogram [with summary in English]. *Pediatrics* 36 no.1:74-78 Ja '58. (MIRA 11:2)

1. Is kliniki propedevniki detskikh bolezney II Moskovskogo meditsinskogo instituta (zav. kafedroy - prof. V.A.Vlasov) na baze Detskoy bol'nitsy imeni N.P.Filatova (glavnyy vrach M.M.Kalugina)
(ARRHYTHMIA) (PARALYSIS) (CHILDREN--DISEASES)

MAKAROV V. N.

SEMENOV, B.N.; MAKAROV, V.N.

~~Disassociation by interference~~ [with summary in English]. *Pediatrics*
36 no.3:39-43 Mr '58. (MIRA 11:3)

1. Iz kafedry provedevtiki detskikh bolezney (zav.-prof. V.A.Vlasov)
II Moskovskogo meditsinskogo instituta i elektrokardiograficheskogo
kabineta (zav.V.N.Makarov) bol'nitsy imeni N.F.Filatova (glavnyy
vrach M.N.Kalugina)
(HEART--DISEASES)

ZHILICH, A.G.; MAKAROV, V.P.

Band structure of cuprous oxide. Fiz. tver. tela 3 no.2:585-
587 F '61. (MIRA 14:6)

1. Leningradskiy gosudarstvennyy universitet.
(Copper oxide)
(Energy band theory of solids)

ZHILICH, A.G.; MAKAROV, V.P.

Band structure of cuprous oxide. Vest.LGU 16 no.10:13-30 '61.

(MIRA 14:5)

(Cuprous oxide crystals) (Energy-band theory of solids)

S/181/63/005/001/049/064
B108/B180

AUTHORS: Gross, Ye. F., Zhilich, A. G., Zakharchenya, B. P.,
Makarov, V. P., and Sibilev, A. I.

TITLE: Zeeman effect of the yellow exciton series in strong magnetic
fields

PERIODICAL: Fizika tverdogo tela, v. 5, no. 1, 1963, 327-338

TEXT: The Zeeman effect of the members of the yellow exciton series of
directed Cu_2O crystals was examined in magnetic fields of up to 140 koe
in the direction perpendicular to the magnetic field. The crystals were
cooled in liquid helium. With increasing field strength the line splitting
grows more complex with rising main quantum number n (Paschen-Bak effect).
The experiments with single crystals showed clear dependence between the
splitting and the orientation of the crystal in the magnetic field. The
Zeeman splitting of the principal members of the yellow series with $n = 2$
is distorted by the action of forbidden lines. Conclusions: In Cu_2O there
is a Γ_{25}^+ zone at the top of the valency band and a Γ_1^+ zone at the bottom
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Zeeman effect of the yellow exciton ...

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of the conduction band. If the former is assumed to be due chiefly to the 2p-state of the oxygen, one can neglect the spin-orbit interaction. If, however, the 12_5^+ valency band is mainly due to the 3d-state of Cu, the spin-orbit interaction will split it into a doubly degenerate 7^+ and a quadruply degenerate 8^+ band (at $\vec{k} = 0$). These two band models are used to develop the theory of the Zeeman effect of directly forbidden excitons. Theory and experiment do not, however, fully agree. The 12_5^- , 12_2^- , 12_1^- symmetry levels may affect the magnetic sublevels that are due to the splitting of the 15 level. There are 3 figures.

ASSOCIATION: Fiziko-tekhnicheskii institut im. A. F. Ioffe AN SSSR,
Leningrad (Physicotechnical Institute imeni A. F. Ioffe
AS USSR, Leningrad)

SUBMITTED: August 14, 1962

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ZHILICH, A.G.; MAKAROV, V.P.

Theory of excitons of large radius in crystals with degenerate
bands. Vest. LGU. 18 no.16:22-37 '63. (MIRA 16:11)

ACCESSION NR: AP4020956

S/0051/54/016/003/0455/0460

AUTHOR: Zakharchenya, B.P.; Makarov, V.P.; Varfolomeyev, A.V.; Rytskin, A.Ya.

TITLE: Zeeman splitting of the principal emission line in $\text{CaF}_2:\text{Tm}^{3+}$ crystals

SOURCE: Optika i spektroskopiya, v.16, no.3, 1984, 455-460

TOPIC TAGS: Zeeman effect, Zeeman splitting, thulium doped calcium fluoride, thulium activated calcium fluoride, calcium fluoride, thulium $2+$, thulium ion, crystal structure, transition probability

ABSTRACT: Observation of the Zeeman effect in the spectra of crystals doped with transition-group ions can yield information on the symmetry of the states involved in the detected transitions, the multipole order of the transitions, and on the crystal structure and field. Zeeman splitting in the optical spectra of $\text{CaF}_2:\text{RE}^{3+}$ (RE = rare earth) crystals was first observed and investigated by V.A.Arkhangel'skaya and P.P.Feofilov (Optika i spektr., 4, 602, 1968) and has subsequently been studied by other authors. The present work is devoted to investigation - experimental and theoretical - of Zeeman splitting of the intense $1.16\text{-}\mu$ line of the divalent thulium ion in CaF_2 . The associated transition is identified. The infrared

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spectra were observed by means of a DFS-12 double monochromator in which the standard diffraction grating was replaced by a special grating with 600 lines/mm and which concentrated 76% of the light in the 0.8 to 2.5- μ region. The linear dispersion was 10 $\text{\AA}/\text{mm}$. The radiation detector was a liquid-nitrogen-cooled FEU-22 photomultiplier. The field was produced by a magnet with 30-mm-diameter Permendur pole pieces and a gap of 20 mm; the highest field strength was 40-kOe. The $\text{CaF}_2:\text{Tm}^{2+}$ single crystals were prepared by gamma-irradiation of $\text{CaF}_2:\text{Tm}^{3+}$ crystals. The specimens were cooled to 77 and 4.2°K. The splitting in the 40 kOe field varies in the range from under 3 to over 9 cm^{-1} , depending on the orientation of the magnetic field, the direction of observation, and the orientation of the electric vector of the light. The components of the doublet are not always equal. The results are analyzed from the theoretical standpoint. An attempt made to observe the splitting of the second intense line at 1.189 μ proved vain for reasons that are still obscure. "The authors acknowledge their gratitude to Ye.F.Gross for his interest in the work and to P.P.Peofilov for useful suggestions." Orig.art.has: 25 formulas and 3 figures.

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Card

ACCESSION NR: AP4043009

S/0051/64/017/002/0219/0229

AUTHORS: Zakharchenya, B. P.; Makarov, V. P.; Ry*skin, A. Ya.

TITLE: Zeeman effect for f-d transitions in the spectra of rare earth fluoride crystals activated with Sm^{2+}

SOURCE: Optika i spektroskopiya, v. 17, no. 2, 1964, 219-229

TOPIC TAGS: Zeeman effect, absorption spectrum, emission spectrum, rare earth compound, fluoride, samarium, group theory

ABSTRACT: This is a continuation of earlier investigations (B. P. Zakharchenya and A. Ya. Ry*skin, Opt. i spektr. v. 13, 875, 1962 and v. 14, 309, 1963), and contains additional experimental facts and a more thorough theoretical discussion. The article reports on the results of experimental and theoretical investigation of the Zeeman effect of the most intense emission lines in crystals of the type $\text{MeF}_2\text{-Sm}^{2+}$ (where Me = Ca, Sr, or Ba) and of the narrow absorp-

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ACCESSION NR: AP4043009

tion lines in $\text{CaF}_2\text{-Sm}^{2+}$ and $\text{SrF}_2\text{-Sm}^{2+}$. The experiments were performed with single crystals $\text{MeF}_2\text{-Sm}^{2+}$ containing a variable amount of Sm^{2+} , up to 0.5%, with the crystals cut in such a way as to permit their orientation in a magnetic field parallel to the four-fold, three-fold, or two-fold axis. The observation was made in polarized light in a direction perpendicular to the magnetic field, with the crystals cooled with liquid helium. The experimental data were analyzed on the basis of group-theoretical representations for the f-d transitions in the crystal. Two approximations were used in the calculation of the states of the f^5d configuration.

In one the interaction of the f^5 electrons with the crystal field is assumed stronger than their interaction with the d-electron, and the other the interaction of the d-electron with the f^5 core is assumed stronger than the interaction of the f^5 electron with the field. The second approximation agrees better with the experimental data. "The authors are grateful to Ye. F. Gross and P. P. Feofilov

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